Mainstreaming Women into Disaster Reduction Decision Making in the Built Environment: Research Methodological Perspectives

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Abstract

The role played by the built environment in determining the casualties and monetary costs of disasters emphasises the need of reducing its disaster vulnerabilities to achieve a disaster resilient built environment. The decision-making process in the built environment thus requires integration with disaster risk reduction. This integration further requires identifying women's specific needs and concerns related to disaster risk reduction in order to reduce women's higher disaster vulnerabilities. A research aiming at mainstreaming women's needs and concerns in to decision making process in the built environment to reduce their vulnerabilities is being carried out and this paper focuses on elaborating its research methodology. The methodology of the research will be discussed under three main sections in the paper. The sections will be, philosophical worldviews, strategies of enquiry and the research methods of the study. Having identified the study as a social research and believing in pragmatism the research takes an interpretivist philosophical stance and selects its research strategy as case studies. The paper explains the philosophical positioning of the research and its case study design in detail while justifying the suitability of the methodological selections of the research through various literature. The latter part of the paper will illustrate the choice of data collection and analysis methods with their suitability to the context of this particular research.

Keywords: built environment, case studies, disaster reduction, research methodology, women

1. Introduction

1.1 Background of the research

Gender is one of the main factors, which determines the capacity and vulnerability to disasters (Childs, 2006). Apropos, it has been illustrated that women are more vulnerable to disasters than men due to their social values (UN/ISDR, 2002). In particular, women are more affected by disasters. Thus, according to UN/ISDR (2002), the promotion and implementation of a comprehensive and sustained policy for disaster reduction has numerous elements, strategic components that are required to be viewed from a gender perspective. Accordingly, as Hyogo framework for action 2005-2015 (UN/ISDR, 2005) states it is significantly important to integrate a gender perspective into all disaster risk management policies, plans and decision making processes aiming at reducing women's vulnerabilities.

In this context, UN/ISDR (2002) highlights gender mainstreaming as a way of integrating a gender perspective into disaster reduction and emphasises the importance of involvement of women in decision making to bring their perception into disaster reduction policies and measures.

On the other hand, the decision-making process in the built environment is necessary to be integrated with disaster reduction since the built environment plays a major role in determining the damages caused by disasters (Bosher et al., 2007). In this context, it is important to ensure that a gender perspective is integrated into disaster risk reduction decisions in the built environment to identify women's specific needs and concerns in order to reduce their higher disaster vulnerabilities. In the context of this particular research, decisions which are taken during planning and designing of a built facility such as deciding on factors such as location, ground preparation requirements, applicable construction codes and standards in relation to reduce the probability of a disaster and its negative consequences are defined as disaster risk reduction decisions.

It has been demonstrated that the severe damages caused by disaster events are a significant threat to sustainable development (UN/ISDR, 2003). Hence, attempting to reduce disaster vulnerabilities and the susceptibilities of the built environment paves a way towards more sustained development. Further, a balanced and equal participation of both women and men in formulating and implementing policies and programmes allows utilising the maximum talent available and can help in identifying different needs, perception and roles and facilitating public policy that is effective and sustainable to help promote gender balanced disaster reduction strategies, plans and programmes (UN/ISDR, 2002).

1.2 Research problem and the aim

The need for integrating disaster risk reduction into the built environment (Bosher et al., 2007) and the importance of mainstreaming women into disaster reduction activities as planning and decision making (UN/ISDR, 2002; Fernando and Fernando, 1997) are emphasised by the research literature and policy makers. Similarly, while showing gender mainstreaming in disaster reduction as a parallel but inter-linked process to the mainstreaming of disaster reduction into sustainable development policies and activities, UN/ISDR (2002) recommends integrating gender, development and disaster

risk reduction both in research and practice. Yet, how to mainstream gender into the decision making in integrating disaster reduction to the built environment is not clearly addressed through research. Hence, there is a research problem of: "how could women be mainstreamed into decision making in disaster reduction in the built environment?" which leads to an aim of investigating how women can be mainstreamed into disaster reduction decision making in the built environment.

2. Research methodology

Research that mainly aims to find patterns of regularity in social life is known as social research (Babbie, 2007). It addresses questions relevant to the social scientific fields such as sociology, human geography, social policy, and politics and criminology and this type of research may be motivated by developments and changes in society (Bryman, 2008). Thus, this research, which aims to explore the ways of mainstreaming women's needs and concerns into disaster reduction decision making in the built environment, could be categorised as a social research. Further, this is a research that could be categorised under naive empiricism in which theory is latent or implicit in the literature (Bryman, 2008). In other words, this research is not directed by any theories, but conditioned by and directed towards the research questions that emerge out of interrogation of the literature.

Incidentally, research methodology, the science of finding out (Babbie, 2007) is a key driver to direct the research along the correct path. The methodology comprises the technical practices used to, identify research questions, collect and analyse data and present findings, and outlines the conceptual and philosophical assumptions that justify the use of particular methods (Payne and Payne, 2004). Apropos, the framework presented by Creswell (2009) for research design (Figure 1) is used as a

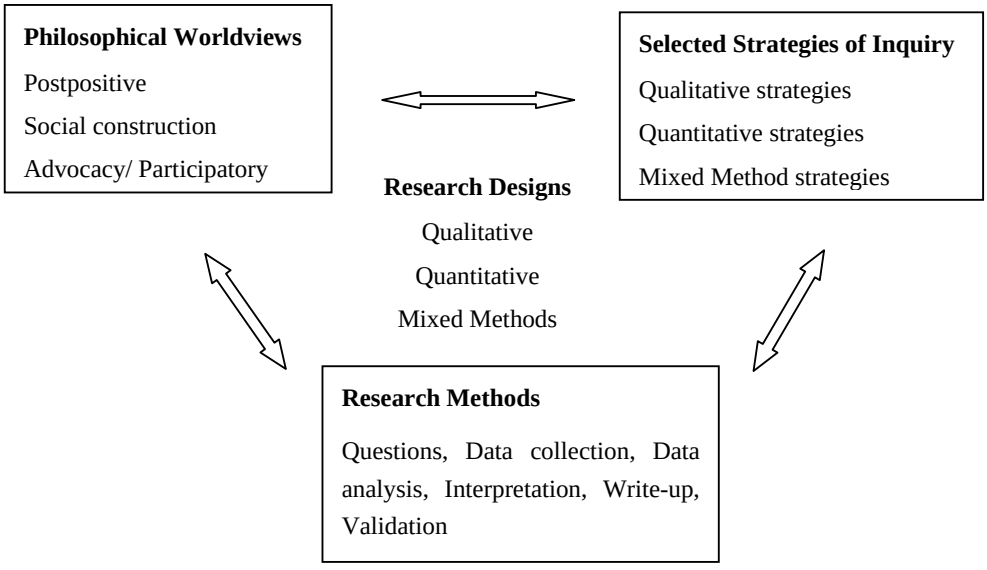

Figure 1: A framework for research design (Creswell, 2009)

guideline to propose a suitable research methodology for this study since it has been identified as an uncomplicated but comprehensive framework. In addition, the views of several other authors on research methodology have also been referred in composing the methodology of the study. According

to Creswell (2009), research design is the plan or proposal to conduct research and it involves the intersection of research philosophy, strategies of inquiry and specific methods.

Accordingly, the subsequent sections details the research design for this particular research whilst demonstrating the rationale behind the chosen path.

2.1 Philosophical worldviews of the study

Research philosophy is a set of beliefs in relation to the development of knowledge and the nature of knowledge (Saunders et al., 2007). Research philosophy is identified by different terms such as research paradigms, epistemologies and ontologies, and philosophical worldviews by different authors (Creswell, 2009). In most instances, the philosophical background of a research is woven by a combination of different paradigms (Saunders et al., 2007). Incidentally, Creswell (2009) identifies four main philosophical worldviews of research as postpositivism, constructivism, advocacy or participatory and pragmatism.

In the context of this study, the researcher has been convinced by the belief that women's specific needs and concerns are not adequately integrated in to disaster reduction decisions in the built environment in identifying the research problem of the study. Therefore, the research was initiated from an advocacy/participatory worldview, which considers that important social issues of the day need to be addressed such as empowerment, inequality, oppression, domination, suppression and alienation (Creswell, 2009). Research which are based on advocacy/participatory worldviews may provide a voice for the participants, raise their consciousness or advance an agenda for change to improve the lives of the participants (Creswell, 2009). However, this particular research is not influenced by the advocacy/participatory paradigm to the extent to believe that research inquiry needs to be intertwined with politics and political agenda though it is the general belief of the enquirers in the paradigm according to Creswell (2009). Apropos, two of the related theoretical perspectives which are embedded in the philosophical assumptions behind the aforementioned research problem are given below:

- Feminist perspectives are focused on various problematic situations of women and the institutions that frame those situations. Research topics may include policy issues related to realising social justice for women in specific contexts or knowledge about oppressive situations for women (Olesen, 2000 cited Creswell, 2003).

- Critical theory perspectives are concerned with empowering human beings to transcend the constraints placed on them by race, class and gender (Fay, 1987 cited Creswell, 2003).

Accordingly, the following sections elaborate the philosophical assumptions of the study in relation to the three main branches of research philosophy.

2.1.1 Epistemology

Epistemology is the way of thinking about what constitutes acceptable knowledge in a certain field of study (Saunders et al., 2007). When deciding the epistemological stance of the research or what methods should be followed to acquire knowledge to address the research problem of this study, the researcher was not influenced by a pre-determined view on what is acceptable knowledge. Therefore, the research was not initiated with either a positivist view or an interpretivist view. Moreover, the research problem was considered from a pragmatist view, which argues that the most important determinant of the research philosophy adopted is the research problem not the methods used (Saunders et al., 2007; Creswell, 2009). Asking questions about reality and the laws of nature are believed by the pragmatists as unnecessary (Creswell, 2009) and pragmatists use many approaches to understand the problem, showing that one approach may be better than another for answering particular questions (Saunders et al., 2007). This results in the view that mixed methods, both qualitative and quantitative are possible within one study (Saunders et al., 2007; Creswell, 2009).

Having viewed the research problem from a pragmatist viewpoint, it was identified that this research prefers interpretivism in the epistemological thinking since the problem is focused on a group of people and their activities. Interpretivism takes the view that there should be research strategies which are capable to appreciate the differences between people and the objects of the natural sciences and leads the social scientists to grasp the subjective meaning of social action (Bryman, 2008). In addition, in interpretivism the social roles of others are interpreted in accordance with interpreter's own set of meanings (Saunders et al., 2007). Notably, the researcher's intent in interpretivism is to interpret the meanings that others have about the research problem (Creswell, 2009).

2.1.2 Ontology

Ontological assumptions and commitments feed into the ways in which research questions are formulated and research is carried out (Bryman, 2008). Incidentally, the aforementioned epistemological stance leads this research towards the ontology of social construction. According to Bryman (2008), ontology in social research concerns whether social entities are objective entities that have a reality external to social actors, or whether they are social constructions built up from the perceptions and actions of social actors. In this context, social construction views reality as being socially constructed (Saunders et al., 2007). Further, it is believed that social actors will perceive different situations in varying ways as a consequence of their own view of world and these different interpretations are likely to affect their actions and the nature of their social interactions with others (Saunders et al., 2007).

2.1.3 Axiology

In addition to epistemology and ontology, the influence of researcher's values, the personal beliefs or the feelings of the researcher creates a part of the philosophical beliefs of a particular research. This is called axiology. The researcher's own values can intrude at any or all of a number of points in the process of social research such as choice of research area, formulation of research questions, choice of

methods and techniques, implementation of data collection, analysis and interpretation of data and conclusions (Bryman, 2008). Therefore, this research has been identified as a value laden research.

Having introduced the philosophical positioning of this research, the paper moves to the next section which addresses the second component of Creswell's (2009) framework for research design.

2.2 Selected strategies of enquiry for the study

Strategies of inquiry in a research provide specific directions for procedures in the research design (Creswell, 2009). They are commonly categorised as qualitative, quantitative and mixed methods. In the context of this research, qualitative strategies of enquiry are the most facilitated by its philosophical assumptions. In particular, qualitative strategies are not preferred by the practices and the norms of positivism especially the way in which the social world is interpreted. As Bryman (2008) shows, qualitative research strategy emphasises words rather than quantification in the collection and analysis of data. Further, it predominantly emphasises an inductive approach to the relationship between theory and research. Therefore, this research will lead to drawing generalisable conclusions from the observations and will bring theory as the outcome of the research. Creswell (2009) lists following five strategies as the main types of enquiries in qualitative research:

- Narrative form of inquiry studies the lives of individuals and provides stories about their lives combined with the views of the researcher in a collaborative narrative (Creswell, 2009).

- Phenomenology identifies the real human experience concerning a phenomenon as described by the participants of a research. This is also sometimes referred to as a philosophy which involves a process of understanding the experiences of participants while attempting to bracket the researcher's own experiences (Creswell, 2009).

- Ethnography researches a phenomenon within the context in which it occurs with the purpose of describing and explaining the social world the research subjects inhabit in the way in which they would describe and explain it (Saunders et al., 2007).

- Case study is an empirical inquiry which investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2009).

- Grounded theory attempts to derive a general, abstract theory of a process, action or interaction grounded in the views of participants in a study (Creswell, 2009). This is a careful and systematic procedure to generate theory where little is already known or to provide a fresh slant on existing knowledge through studying relationships of the individual's experiences to the society and to history (Goulding, 1998). Thus, in this, data collection is initiated without the formation of an initial theoretical framework (Saunders et al., 2007).

Grounded theory and case studies are frequently used by the researchers to explore processes, activities and events while narrative and phenomenology are used for studying individuals, and

ethnography is used to learn about broad culture sharing behaviour of individuals or groups (Creswell, 2009). Therefore, the grounded theory method and case studies have been identified as the most suitable strategies of inquiry for this research since the study mainly focuses at a process that tries to mainstream women into decision making.

However, according to Yin (2009) there are three aspects that condition the selection of appropriate strategy such as, type of research questions posed, the extent of the control an investigator has over actual behavioural events and the degree of focus on contemporary as opposed to historical events. In addition, the extent of existing knowledge in the problem area, the amount of time and other resources available, and the philosophical underpinning shape the selection of research strategy (Saunders et al., 2007). Thus, case studies has been selected as the most suitable research strategy for this particular study as the study focuses on a contemporary phenomenon with considerable existing background knowledge which allows the development of an initial conceptual model and a set of research question that could guide the research. Further, the time constraints on this research was a consideration in selecting case studies over grounded theory method as the main research strategy, since the grounded theory method evolves theory as a product of continuous interplay between data collection and analysis which needs to be carried out until saturation of concept categories occurs (Goulding, 1998). Accordingly, the following sub section discusses the application of case study research strategy for the study.

2.2.1 Case studies

Case studies allow the researcher to explore in depth a programme, an event, an activity, a process or one or more individuals (Creswell, 2009; Yin, 2009). The phenomenon which is studied is seen as a social unit in its own right and as a holistic entity and this social unit is a single example of the many cases that make up the type of unit in question (Payne and Payne, 2004). Case studies are known as the most relevant strategy to understand complex social phenomena and to address research questions in forms of ‘how’ and ‘why’, which are categorised as more explanatory natured (Creswell, 2009; Yin, 2009). Further, as Yin (2009) states, case studies have a distinct advantage over other strategies when ‘how’ and ‘why’ questions are being asked about a contemporary set of events, over which the investigator has little or no control. This emphasises the appropriateness of case studies to this particular study since the core research questions to be answered are: “why should women be mainstreamed into disaster reduction decision making in the built environment and how can they be mainstreamed?” According to Yin (2009), the following five components are important for a case study design.

- Research question
- Research propositions
- Unit of analysis
- Logic linking the data to the propositions

- Criteria for interpreting the findings

Case study designs can be divided in to two main types such as, single case designs and multiple case designs (Yin, 2009). The selection between these two options or the theoretical sampling of cases mainly depends on the nature of the phenomenon to be studied (Eisenhardt and Graebner, 2007). Notably, single case designs are chosen if the cases are unusually revelatory, extreme exemplars or opportunities for unusual research access (Eisenhardt and Graebner, 2007). According to Yin (2009), theoretical sampling of single cases could be rationalised if the cases fall under any of the following five types:

- Critical case which fulfils all the conditions for testing a theory
- Extreme case or unique case whose characteristics are not replicated in any other case
- Representative or typical case which provides common conditions and circumstances
- Revelatory case which gives opportunity for studying of a previously inaccessible phenomenon
- Longitudinal case in which the same needs to be studied at different points of time to understand how conditions change over time

Accordingly, multiple case design has been identified as the appropriate design for this particular research since its cases could not be characterised as any of the above five types. Yin (2009) emphasises, exceptions to the above five need multiple case designs as they require replication, extension of theory, contrary replication or elimination of alternative explanations.

Further, the design of case study research varies upon the unit of analysis i.e. based on what conclusions will be drawn at the end of the study (Yin, 2009). According to Yin (2009) a case study design could have either a single unit of analysis (holistic) or multiple units of analysis (embedded). As Miles and Huberman (1994) state, the unit of analysis is the focus or the heart of the study and the case becomes the unit of analysis when the boundary of the phenomenon is defined with settings, concepts, sampling, etc. Accordingly, the focus of this study has been identified as the decision making process of the built environment in relation to disaster risk management (DRM). Further, the case boundary is defined by the specific contexts of different countries. A graphical representation of the unit of analysis of the study is given in figure 2. Incidentally, this is a holistic case study design since this study focuses only on one issue within the defined case boundary.

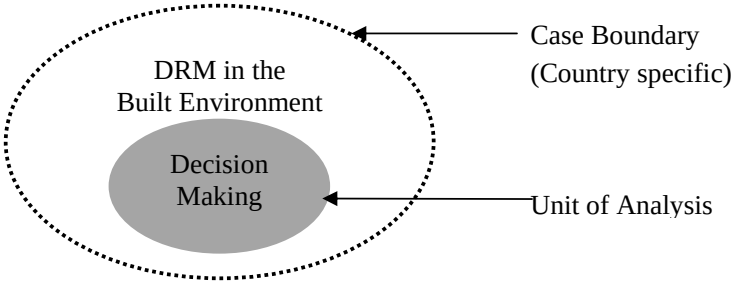

Figure 2: Unit of analysis of the study

The following section, in addressing the third component of building up a suitable research methodology discusses the applicable data collection, analysis and validation methods for this research.

2.3 Research methods of the study

2.3.1 Methods of data collection and analysis

According to Yin (2009), there are six main methods of data collection in case studies. They are; documentation, archival records, interviews, direct observation and physical artefacts. In this research, interviews are the key source of evidence since they are highly efficient in gathering rich empirical data in qualitative research (Eisenhardt and Graebner, 2007). The interviews of this study attempt to obtain data to understand why women should be mainstreamed into disaster risk reduction decisions in the built environment and how that can be achieved. As Eisenhardt and Graebner (2007) suggest it is intended to approach numerous and highly informed interviewees who are able to view the phenomenon from diverse perspectives in order to reduce the bias in interview data.

When analysing qualitative data, the first step is to organise and prepare them for analysis. As Creswell (2009) indicates this involves transcribing interviews, scanning materials and sorting and arranging the data into different types depending on the source of the information. The organised data will then be read thoroughly and understood to gain the general views that they present (Creswell, 2009). The next step of the analysis will be to develop different data categories according to the different ideas which emerge from the transcribed or sorted data (Saunders et al., 2007). This will be carried out by allocating units of original data to these categories and recognising the relationships within and amongst categories in order to generate the theory (Saunders et al., 2007). The software NVivo has been recognised as an effective electronic tool to support the aforementioned procedure.

2.3.2 Methods of validation

As Yin (2009) shows it is necessary to judge the quality and validity of a case study design to ensure that it represents a logical set of statements. In this context, it is proposed to use four tests, which have been commonly used to establish the quality of any empirical research (Yin, 2009). Table 1 exhibits the tactics that could be used in case studies to fulfil the requirements of these four tests.

Thus, the quality and the validity of the proposed case study research will be assessed during the research using the given tactics appropriately.

Table 1: Case study tactics for four design tests (Source: Yin, 2009)

Tests	*Case Study Tactic*	*Phase of research in which tactic occurs*
Construct validity	*Use multiple sources of evidence*	*Data collection*
	Establish chain of evidence	*Data collection*
	Have key informants review draft case study report	*Composition*
Internal validity	*Do pattern matching*	*Data analysis*
	Do explanation building	*Data analysis*
	Address rival explanations	*Data analysis*
	Use logic models	*Data analysis*
External validity	*Use replication in multiple case studies*	*Research design*
Reliability	*Use case study protocol*	*Data collection*
	Develop case study database	*Data collection*

In addition, some quantitative data also will be collected within the case studies to enable confirmation and corroboration of qualitative data with quantitative data via triangulation (Rossman and Wilson, 1991). Incidentally, the questionnaires will be used in collecting quantitative data mainly on capturing ways of mainstreaming women into the given context and their extent of applicability. These quantitative data will be analysed by coding with numerical measurements, integrating them into data matrices of respondents/cases vs variables and then interpreting them using statistical techniques (Saunders et al., 2007).

3. Conclusions

Research methodology comprises the technical practices used to, identify research questions, collect and analyse data and present findings, and the conceptual and philosophical assumptions that justify the use of particular methods. It guides a research with necessary directions to achieve the aims and objectives of the research.

The paper develops a discussion on the suitable research methodology for a social science research which aims to investigate how women can be mainstreamed into disaster reduction decision making in the built environment. Incidentally, having viewed the research problem from a pragmatist viewpoint, it was identified that this research prefers interpretivism in its epistemological thinking since it appreciates the differences between people and the objects of the natural sciences. Accordingly, the interpretivist stance of the study leads the researcher to capture the subjective meaning of people and their activities providing ontological assumptions of social construction to the research. In addition, this research has been identified as a value laden research under axiological assumptions.

Case studies has been selected as the most suitable research strategy for this particular study as the study focuses on a contemporary phenomenon which has no control over for the researcher with considerable existing background knowledge. Further, case studies are the most relevant strategy to understand the core research questions of this study which are in forms of 'how' and 'why'. In particular, the study seeks a holistic multiple case design in which the unit of analysis becomes the decision making process of the built environment in relation to disaster risk management.

Interviews are the key method of data collection in this research since they are highly efficient in gathering rich empirical data in qualitative research. In addition, some quantitative data also will be collected within the case studies with an intension of data triangulation.

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